Genetic Mapping of Common Bunt (*Tilletia caries*) Resistance Gene Bt3

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Abstract

The variety 'Florence' was developed by Farrer (1901) and reported to have a common bunt resistance gene (Pye 1909, Churchward, J. G. 1931).

'Ridit' (Wash. No. 2324, C. I. No. 6703) was developed by the Washington Agricultural Experiment Station at Pullman. It is a selection out of a cross between Turkey and Florence made in 1915 by Gaines. A selection made in 1919 resulted in the 'Ridit' variety, now used as the Bt3 differential (Metzger 1970).

Müllner *et al* (2020) mapped a number of QTLs, including the QTL *QBt.ifa-1AL,* in a mapping populations where Blizzard and Bonneville were donors of resistance. The authors concluded that *QBt.ifa-1AL* probably was Bt3.

We fine-mapped the gene/loci using the same dataset to the 8,403,717 bp interval 498,451,021 – 506,854,738 bp.

Lunzer *et al*. (2023) mapped a QTL named *QBt.ifa-1A* in a Dimenit (PI 166910) x Rainer cross to the 160 Mbp interval 355.2 - 515.2 Mbp.

We did a detailed analysis on the two data sets and found that markers inside the fine-mapped interval in Blizzard, Bonneville and Dimenit (PI 166910) matches with markers in 'Ridit' (CItr 6703) and 'M83-1551' (PI 554116), both having Bt3.

Phenotyping selected RILs from the mapping populations with eight virulence races gave supporting, but not conclusive, evidence for QTL *QBt.ifa-1AL* and QTL *QBt.ifa-1A* being Bt3.

References

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